NOAA Fleet Update

January 2020

The following update provides the status of NOAA's fleet of ships and aircraft, which play a critical role in the collection of oceanographic, atmospheric, hydrographic, and fisheries data. NOAA's current fleet of 15 ships – the largest civilian research and survey fleet in the world – and nine aircraft, are operated, managed, and maintained by NOAA's Office of Marine and Aviation Operations (OMAO). OMAO includes civilians, mariners, and officers of the United States NOAA Commissioned Officer Corps (NOAA Corps), one of the nation's seven Uniformed Services.

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NOAA Commissioned Officer Corps

OMAO and the NOAA Corps are an integral part of NOAA and our officers operate OMAO's research and survey fleet of 15 ships and 9 aircraft. Mission areas can range from launching a weather balloon at the South Pole, conducting hydrographic or fishery surveys in Alaska, maintaining buoys in the tropical Pacific, flying snow surveys over the Midwest, or flying our "Hurricane Hunter" aircraft into, or above, hurricanes.

Selection Boards and Application Process

The NOAA Corps is currently accepting applications for BOTC 136, which will begin in July 2020. The application deadline is January 17, 2020, to receive an interview. A selection board will convene in mid-March 2020. Additional information may be found on the NOAA Corps website and BOTC 136 applicants may start the process, utilizing the online NOAA Corps E-Recruit System. (NOAA Corps E-Recruit).

Recruiting Events

The NOAA Corps recruiting team has wrapped up the recent recruiting cycle, and will be attending career fairs again in the spring of 2020.

Basic Officer Training Class 135

A selection board convened in July 2019 to make selections for BOTC 135. Fourteen Officer Candidates have reported to the NOAA Corps Officer Training Center at the United States Coast Guard Academy in New London, Connecticut on January 6 and have been sworn in and received their temporary appointments.

Alice B. Beittel – San Leandro, California
Matthew J. Chonka – San Marcos, Texas
Tyler J. Houck – Berlin, New Jersey
Abby W. Letts – Pasadena, California
Alexander Linares – Cabo Rojo, Puerto Rico
Luke E. McConville – Glen Mills, Pennsylvania
Mark J. Meadows – Virginia Beach, Virginia
Luke T.C. Petzy – Methuen, Massachusetts
Jesse A. Pierce – Broadway, Virginia
Christine R. Sealing – Annapolis, Maryland
Jessica S. Spruill – Douglasville, Georgia
Karl D. Wagner – Middleport, New York
Kelly M. Wooten – Leavenworth, Kansas
Anthony J. Zoller – Napa, California

Officer Candidates for BOTC 135 report for training, January 6, 2020.
[Photo Credit: NOAA]

After a couple of initial days of organizational familiarization, administrative necessities, and the procurement of uniforms, the Officer Candidates began training at the Academy. The training program will focus on their professional development in areas such as officer bearing, attention to detail, time management, and proper wear of the uniform while simultaneously beginning their Basic Seamanship course. Their time at the Academy will include underway experience on multiple training platforms, including two weeks underway on U.S. Coast Guard Barque *EAGLE*. Training at the Academy will conclude in May with a graduation alongside their US Coast Guard Officer Candidate School colleagues. Following graduation, the new Ensigns will depart on a week-long capstone training cruise aboard a NOAA ship, and receive a week of simulator-based Bridge Resource Management training. By June, the officers will report to their initial assignments. Congratulations to BOTC 135!

OMAO's Ships and Centers

OMAO's Ship Tracker shows information about the present location of our fleet of research and survey ships. Please note: To access Ship Tracker you must have an account with a .gov or .mil email address. All other access is restricted.

OMAO's ships and related Marine Centers are listed below based on the geographical location of the vessels' homeports starting in the Northeast and ending in the Pacific.

NOAA Ship locations at the start of January, 2020.
[Photo Credit: NOAA]

National

OMAO'S MARINE OPERATIONS

Director of Marine Operations: Mr. Troy Frost

OMAO's Marine Operations oversees the operations of OMAO's ships and the three regional Centers, including the Marine Operations Center-Pacific, Marine Operations Center-Atlantic, and Marine Operations Center-Pacific Islands. Employees of Marine Operations are stationed nationwide to provide strategic, administrative, engineering, maintenance, electronic, budgetary, and personnel support to the OMAO fleet. Each year these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

New Castle, New Hampshire

NOAA Ship *Ferdinand R. Hassler*
Commanding Officer: Commander Mark Blankenship
Primary Mission Category: Hydrographic Surveys
Depart: Brooklyn, New York
Arrive: New Castle, New Hampshire
Ship Status: Dry dock in Brooklyn, New York for repairs to rudder system. Planned departure TBD.

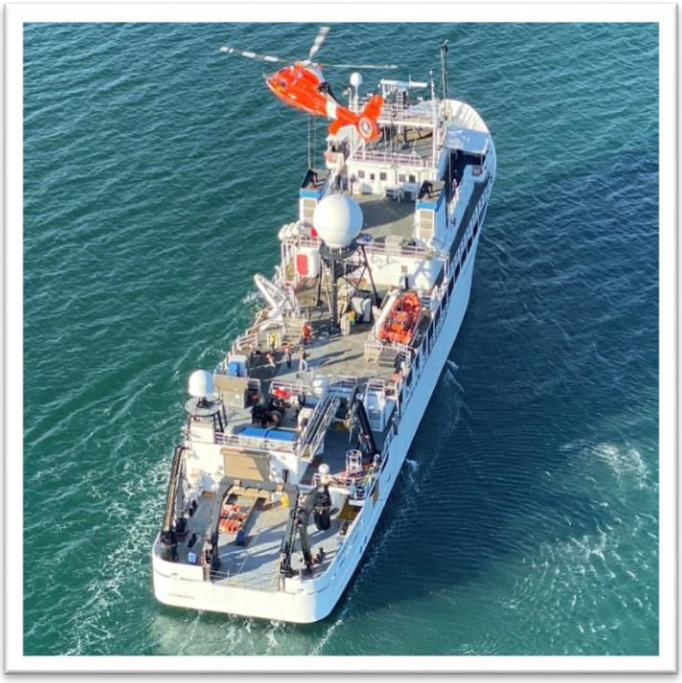
Newport, Rhode Island

NOAA Ship *Henry B. Bigelow*
Commanding Officer: Captain William Mowitt
Primary Mission Category: Fisheries Research
In Port: Newport, Rhode Island
Ship Status: Alongside for scheduled repairs in Newport, Rhode Island until late February, 2020.

NOAA Ship *Henry B. Bigelow* conducts bottom trawl surveys off the coast of Cape Hatteras, North Carolina, in late 2019.
[Photo Credit: NOAA]

North Kingstown (Davisville), Rhode Island

NOAA Ship *Okeanos Explorer*
Commanding Officer: Commander Nicole Manning
Primary Mission Category: Oceanographic Exploration and Research
In Port: Pascagoula, Mississippi
Ship Status: Alongside for scheduled repairs in Pascagoula, Mississippi until late February, 2020.



NOAA Ship *Okeanos Explorer* conducted helicopter evacuation drills with two crews from the USCG Aviation Training Center Mobile, in the Gulf of Mexico in early December.
[Photo Credit: Lieutenant Commander Ian Culver, USCG]

Norfolk, Virginia

NOAA Ship *Thomas Jefferson*
Commanding Officer: Commander Briana Hillstrom
Primary Mission Category: Hydrographic Surveys
In Port: Norfolk, Virginia
Ship Status: Alongside for scheduled repairs in Norfolk, Virginia until late February, 2020.

OMAO'S MARINE OPERATIONS CENTER – ATLANTIC (MOC-A)
Commanding Officer: Captain David Zezula
MOC-A serves as homeport for NOAA Ship *Thomas Jefferson*. Its personnel provide administrative and logistical support and manage the day-to-day operations for the research and survey ships in NOAA's Atlantic and Gulf of Mexico fleet of nine vessels. Each year, these ships conduct dozens of missions, to assess marine ecosystems including fish and marine mammal stocks, coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

Charleston, South Carolina

NOAA Ship *Nancy Foster*
Commanding Officer: Commander James Brinkley
Primary Mission Category: Oceanographic Research, Environmental Assessment **In Port**: Charleston, South Carolina
Ship Status: Dry docked for scheduled repairs in Charleston, South Carolina until early February, 2020.

NOAA Ship *Ronald H. Brown*

Commanding Officer: Commander Jeffrey Shoup
Primary Mission Category: Oceanographic Research, Environmental Assessment
Depart: Bridgetown, Barbados
Arrive: Bridgetown, Barbados
Ship Status: The ship departed in early January for ATOMIC (Atlantic Tradewind Ocean-Atmosphere Mesoscale Interaction Campaign) +NTAS. As part of ATOMIC, the NTAS (Northwest Tropical Atlantic Station) buoy will be replaced. The objective of this project is to gather information on shallow convection, the effects of clouds on the ocean surface energy budget, and mesoscale oceanic processes – all of which are relevant to the propagation of Madden-Julian Oscillations (MJOs), hurricane track and intensity, annual movement of the Intertropical Convergence Zone (ITCZ), mid-latitude storm tracks, and marine stratocumulus cloud regions.

Pascagoula, Mississippi

NOAA Ship *Pisces*

Commanding Officer: Commander Patrick Murphy
Primary Mission Category: Fisheries Research
In Port: Pascagoula, Mississippi
Ship Status: Alongside for scheduled repairs in Pascagoula, Mississippi until February, 2020.

NOAA Ship *Oregon II*

Commanding Officer: Master David Nelson
Primary Mission Category: Fisheries Research
In Port: Pascagoula, Mississippi
Ship Status: Dry docked for scheduled repairs in Pascagoula, Mississippi until late March, 2020.

NOAA Ship *Gordon Gunter*

Commanding Officer: Lieutenant Commander Christopher Skapin
Primary Mission Category: Fisheries Research
In Port: Tampa, Florida
Ship Status: Dry docked for scheduled repairs in Tampa, Florida until early February, 2020.

San Diego, California

NOAA Ship *Reuben Lasker*

Commanding Officer: Captain Chad Cary
Primary Mission Category: Fisheries Research
Depart: San Diego, California
Arrive: San Francisco, California
Ship Status: The ship departed on January 4th for California Cooperative Oceanic Fisheries Investigations (CalCOFI). This project is a partnership of the California Department of Fish & Wildlife, NOAA Fisheries Service and Scripps Institution of

Oceanography. The study focuses on the marine environment off the coast of California, the management of its living resources, and monitoring the indicators of El Nino. CalCOFI conducts quarterly cruises off southern & central California. The ship will enter Dry Dock in Vallejo, CA after CalCOFI.

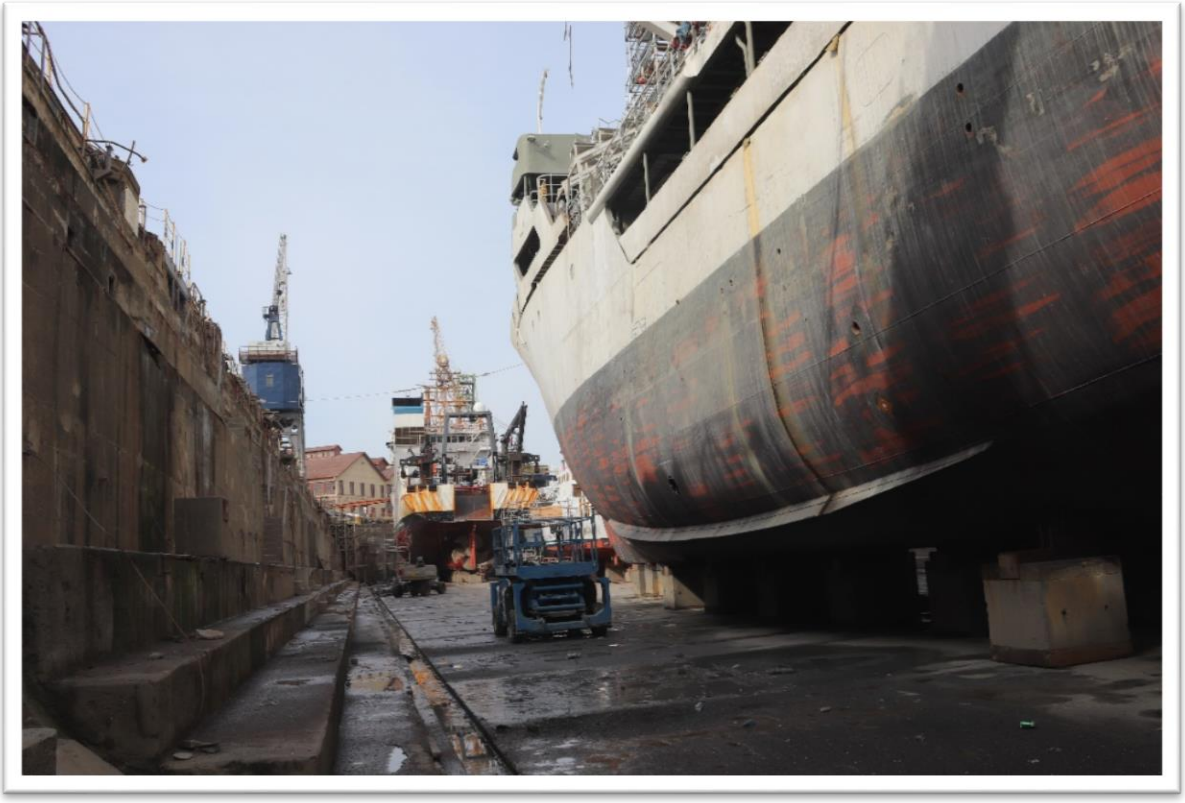
Newport, Oregon

NOAA Ship *Rainier*

Commanding Officer: Commander Samuel Greenaway
Primary Mission Category: Hydrographic Surveys
Depart: Vallejo, California
Arrive: Newport, Oregon
Ship Status: Ship will undergo dockside and dry-dock maintenance in Vallejo, California through late-January 2020, then transit to Newport, Oregon for post-yard maintenance and preparations.

NOAA Ship *Bell M. Shimada*

Commanding Officer: Captain Arthur "Jesse" Stark
Primary Mission Category: Fisheries Research
In Port: Vallejo, California
Ship Status: Ship will undergo dockside and dry-dock maintenance in Vallejo, California through mid-February.



NOAA Ship *Bell M. Shimada* (background) and *Rainier* (right) at Mare Island Shipyard in Vallejo, California in late 2019.
[Photo Credit: NOAA]

OMAO'S MARINE OPERATIONS CENTER – PACIFIC (MOC-P)

Commanding Officer: Captain Michael Hopkins
MOC-P serves as a homeport for two NOAA ships. Its personnel provide administrative and logistical support, and manage the day-to-day operations, for the research and survey ships in NOAA's Pacific fleet. Each year, these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean. MOC-P also serves as the home of OMAO's Marine Operations.

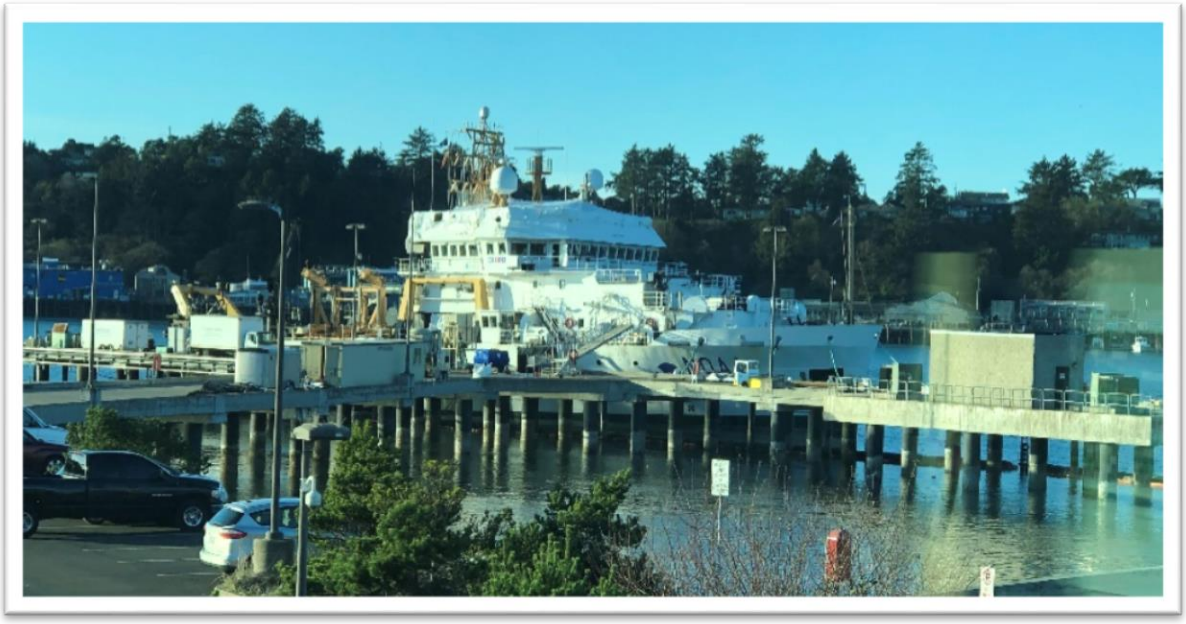
In December, MOC-P hosted an Environmental Compliance Officer Workshop highlighting OMAO's commitment to leadership in our environmental responsibilities.
[Photo Credit: Lieutenant Commander Timothy Sinquefield, NOAA]

Ketchikan, Alaska

NOAA Ship *Fairweather*
Commanding Officer: Captain Marc Moser
Primary Mission Category: Hydrographic Surveys
In Port: Seattle, Washington
Ship Status: Ship will undergo extensive dockside maintenance in Seattle, Washington through mid-February.

Kodiak, Alaska

NOAA Ship *Oscar Dyson*
Commanding Officer: Commander Sarah Duncan
Primary Mission Category: Fisheries Research
Depart: Newport, Oregon
Arrive: Seattle, Washington
Ship Status: The ship is dockside at Newport, Oregon for major dockside repairs until mid-January. Ship will then depart for Seattle, Washington, for gear loading and underway training prior to the beginning the field season. The crew will conduct Gear Trails with Alaska Fisheries Science Center personnel to ensure net systems and sonar are suitable for Pollock surveys that will be conducted throughout the year.



The view of NOAA Ship *Oscar Dyson* from MOC-P, where she is undergoing major dockside repairs.
[Photo: Lieutenant Commander Timothy Sinquefield, NOAA]

Honolulu, Hawaii

NOAA Ship *Oscar Elton Sette*
Commanding Officer: Commander Tony Perry III
Primary Mission Category: Fisheries Research
Depart: Honolulu, Hawaii
Arrive: Honolulu, Hawaii
Ship Status: The ship completed repairs in early January and got underway for a few days of Operational Readiness Training and Gear Testing. Planned departure in mid-January for the Hawaiian Islands Cetacean Ecosystem Assessment Survey (HICEAS) project to conduct cetacean surveys of the waters around the Main Hawaiian Islands and the eastern-most Northwest Hawaiian Islands.

OMAO'S MARINE OPERATIONS CENTER – PACIFIC ISLANDS (MOC-PI)
Commanding Officer: Captain Joe Bishop
MOC-PI serves as a homeport for one NOAA ship. Its personnel provide administrative and logistical support, and manage the day-to-day operations for NOAA Ship *Oscar Elton Sette* and for ships operating in the western Pacific. Each year, these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

OMAO's Aircraft

Lakeland, Florida

NOAA's fleet of nine manned aircraft is based at OMAO's Aircraft Operations Center (AOC). Located at Lakeland Linder Regional Airport in Lakeland, Florida, the officers, crew, and scientists from AOC provide capable, mission-ready aircraft and professional crews to the scientific community. AOC is committed to the safe, efficient and economical use of NOAA aircraft and has more than four decades of experience developing, coordinating and successfully and safely conducting airborne environmental data gathering missions. OMAO's aircraft fleet includes the following platforms and the web links provide additional photos, information on each aircraft, and the missions they serve:

OMAO'S AIRCRAFT OPERATIONS CENTER (AOC)

Commanding Officer: Commander Christian Sloan

The AOC, located at Lakeland Linder Regional Airport in Lakeland, Florida, serves as the main base for OMAO's fleet of nine aircraft and provides capable, mission-ready aircraft and professional crews to the scientific community. Whether studying global climate change or acid rain, assessing marine mammal populations, surveying coastal erosion, investigating oil spills, flight checking aeronautical charts, or improving hurricane prediction models, the AOC flight crews continue to operate in some of the world's most demanding flight regimes.

AOC personnel and aircraft in the hangar at the NOAA Aircraft Operations Center in Lakeland, Florida

[Photo Credit: NOAA]

P-3 "Hurricane Hunter" [Tail ID# N42RF]

Who: Officers and crew of OMAO/NOAA Corps along with scientists from NOAA's National Environmental Satellite, Data, and Information Service's Center for Satellite Application and Research

What: Ocean Winds and Rain Experiment

When: January 14 - February 12

Where: Shannon, Ireland

Why: To monitor and observe ocean surface vector winds, which are crucial pieces of information needed to understand and predict the short-term and long-term processes that drive our planet's environment. As the largest source of momentum for the ocean surface, winds affect the full range of ocean movement, from individual surface waves to complete current systems.

NOAA WP-3D Orion, "Kermit", and a WC-130J Hercules from the 53rd Weather Reconnaissance Squadron on the tarmac together with their crews at Keesler AFB in Mississippi, in November 2019.

[Photo Credit: 403rd Wing/Public Affairs, USAF]

P-3 "Hurricane Hunter" [Tail ID# N43RF]

Who: Officers and crew of OMAO/NOAA Corps along with scientists from NOAA's Office of Atmospheric Research (OAR), Earth Sciences Research Laboratory (ESRL)

What: ATOMIC (**Atlantic Tradewind Ocean–Atmosphere Mesoscale Interaction Campaign)**

When: January 15 - February 13

Where: Barbados, U.S. Virgin Islands

Why: To investigate atmospheric shallow convection and air-sea interaction in the tropical North Atlantic east of Barbados. This effort will deploy instruments from a research ship and aircraft to measure key cloud and air-sea interaction processes that are needed to improve understanding and prediction of the impacts of shallow convection on weather and climate conditions on the U.S.

G-IV "Hurricane Hunter" [Tail ID# N49RF]

Who: Officers and crew of OMAO/NOAA Corps along with scientists from NOAA's Office of Atmospheric Research (OAR), Earth Sciences Research Laboratory (ESRL)

What: Atmospheric Rivers

When: January 15 - March 30

Where: Portland, Oregon

Why: To obtain high altitude data capturing aerosol (solid or liquid particles suspended in air) plumes and the interaction with atmospheric rivers off, near, and on coastal and inland environments. Atmospheric rivers are a direct source of precipitation to the west coast of the United States.

King Air 350 [Tail ID# N68RF]

Who: Officers and crew of OMAO/NOAA Corps along with scientists from NOAA's National Ocean Service, National Geodetic Survey's Coastal Mapping Program

What: Coastal mapping flights

When: January 1 - July 1

Where: TBD based on weather and tide stages.

Why: These flights provide critical baseline data to help accurately map the U.S. shoreline. The data are important for national security, maritime shipping, and navigation.

Jet Prop Commander [Tail ID# N45RF]

Who: Officers and crew of OMAO/NOAA Corps along with scientists from the National Weather Service (NWS), National Operational Hydrologic Remote Sensing Center (NOHRSC)

What: Water Resource Surveys (Soil Moisture)

When: January 1 - May 15

Where: Midwest and Northeast United States

Why: The aircraft will conduct low level (500 feet) surveys to collect Snow Water Equivalent data for NWS River Forecast Centers. NWS Weather Forecast Offices and NWS River Forecast Centers use these data when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks.

Twin Otter [Tail ID# N46RF]

Who: Officers and crew of OMAO/NOAA Corps along with scientists from the National Weather Service (NWS), National Operational Hydrologic Remote Sensing Center (NOHRSC)

What: Water Resource Surveys (Snow Survey)

When: January 1 - May 15

Where: Midwest and Northeast United States

Why: The aircraft will conduct Low level (500 feet) surveys to collect Snow Water Equivalent data for NWS River Forecast Centers. NWS Weather Forecast Offices and NWS River Forecast Centers use these data when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks.

Twin Otter [Tail ID# N48RF]

Who: Officers and crew of OMAO/NOAA Corps along with scientists from the National Marine Fisheries Service (NMFS), Southeast Fisheries Science Center (SEFSC)

What: Southeast North Atlantic Right Whale Surveys
When: January 1 - March 31
Where: St. Simons Island, Georgia
Why: Provide real time sighting information to commercial shipping interests in an effort to reduce ship collisions, to better understand the distribution and abundance, and collect photographic images of critically endangered North Atlantic Right Whales. With as few as 400 remaining, surveillance flights to track their migration patterns are important for conservation and recovery efforts.

Twin Otter [Tail ID# N56RF]
Scheduled maintenance until January 27.

Who: Officers and crew of OMAO/NOAA Corps along with scientists from the National Marine Fisheries Service (NMFS), Northeast Fisheries Science Center (NEFSC)
What: Northeast North Atlantic Right Whale Surveys
When: January 28 - March 19
Where: Cape Cod, Massachusetts
Why: Provide real time sighting information to commercial shipping interests in an effort to reduce ship collisions, to better understand the distribution and abundance, and collect photographic images of critically endangered North Atlantic Right Whales. With as few as 400 remaining, surveillance flights to track their migration patterns are important for conservation and recovery efforts.

Twin Otter [Tail ID# N57RF]
Who: Officers and crew of OMAO/NOAA Corps along with scientists from National Marine Fisheries Service (NMFS), Southeast Fisheries Science Center (SEFSC)
What: Southeast Atlantic Marine Assessment Program for Protected Species (AMAPPS)
When: January 1 – January 28 *(Training flights to follow)*
Where: Cities TBD
Why: Improved information is needed on living marine resource abundance, distribution, habitat use, and behavior in the Atlantic Ocean to properly mitigate and monitor for potential impacts of human activities, including those related to offshore energy development.

Unmanned Aerial System (UAS) Section
The UAS Section provides nationwide policy input, oversight, and guidance for all of NOAA's UAS operations. The UAS Section of AOC is staffed by a team of aviation professionals who specialize in operational UAS implementation. The UAS Section tracks all small UAS (sUAS) operations for NOAA to include aircraft hours, types, pilot qualifications, and pilot training. The UAS Section also coordinates airspace approvals for operations within the United States National Airspace System, special use airspace, and foreign airspace. AOC conducts a thorough review of all projects by applying established risk management procedures to UAS missions, including an airworthiness review of all aircraft. This support is provided to NOAA Line Offices and partners to further develop and refine the use of sUAS for NOAA's research and data collection.

Unmanned Systems Support

Nationwide

APH-22 Hexacopter

Location: Copacabana, Antarctica
Mission: Antarctic Ecosystem Research Division Copacabana Field Station Antarctica
Southwest Fisheries Science Center's Antarctic Ecosystem Research Division will conduct operations to collect aerial images of penguin colonies.

Location: Oahu, Hawaii
Mission: Pacific Islands Fisheries Science Center APH-22 Training
Pacific Islands Fisheries Science Center utilizes the Kawainui Model Airplane Field to conduct training and proficiency flights. This allows APH-22 operators to maintain proficiency for future operations at a reduced cost. Training flights are also approved from NOAA small boats.

Location: San Miguel Island, California
Mission: Marine Mammal Laboratory-Alaska Fisheries Science Center: NOAA Fur Seals and California Sea Lions
Marine Mammal Laboratory's California Current Ecosystem Program is conducting northern fur seal and California sea lion surveys to identify tagged/branded individuals and conduct population assessments.

Location: Sea Life Park and Dolphin Quest Oahu, Hawaii
Mission: Pacific Islands Fisheries Science Center Cetacean Research Program
Images taken by the APH-22 are used to collect photogrammetric measurements of captive cetaceans. Photogrammetric measurements are compared with the known manual measurements to determine accuracy. Consistent trade winds can make image collection difficult. Practices found to improve image quality and accuracy can be used to improve operations over wild populations.

APH-22 Hexacopter

APH-28 Hexacopter

Image taken by an APH-28 Hexacopter

APH-28 Hexacopter

Location: Cape Shirreff, Livingston Island, Antarctica
Mission: Antarctic Ecosystem Research Division Cape Shirreff
The Antarctic Ecosystem Research Division will conducting flights to survey Penguin and Seal Colonies in Cape Shirreff, Livingston Island, Antarctica.

APH-22 Hexacopter / APH-28 Hexacopter

Location: Nearshore Atlantic Coast, Florida/Georgia
Mission: Northeast Fisheries Science Center Right Whale Calving
Northeast Fisheries Science Center is conducting operations surveying Right Whales along the Florida/Georgia coastline. An emphasis is being placed on collecting images of mother and calf pairs.

Location: Muskeget Island, Massachusetts
Mission: Northeast Fisheries Science Center Grey Seal Survey
Northeast Fisheries Science Center is conducting Grey Seal Pup surveys on Muskeget Island.

Location: Woods Hole, Massachusetts
Mission: NMFS Northeast Fisheries Science Center Training sites
Northeast Fisheries Science Center is approved to conduct proficiency and demonstration flights at Woods Hole Pier, Waquoit Bay National Estuarine Research Reserve, and nearshore waters in the Woods Hole area.

Location: NOAA Aircraft Operations Center, Lakeland, Florida
Mission: New Aircraft
The NOAA Aircraft Operations Center acquired 1 APH-22 and 1 APH-28 for training, testing and fleet support. Training flights will be conducted monthly.

Location: Western Regional Center, NOAA Campus, Seattle, Washington
Mission: Alaska Fisheries Science Center Training Site
Alaska Fisheries Science Center has been approved to conduct proficiency training, manufacturer training, and payload calibration flights at the Western Regional Center-Seattle, NOAA Campus. These flights will allow Alaska Fisheries Science Center to remain proficient and prepare for upcoming projects.

APH-22 Hexacopter / APH-28 Hexacopter / APO-42 Octocopter

Location: Jamul, California
Mission: Jamul Bureau of Land Management Area
Southwest Fisheries Science Center has been approved to conduct training and proficiency flights in Jamul, CA. This training site is owned by US Fish and Wildlife. This will allow pilots to practice landing, following a target, and approaching to collect blow samples.

APO-42 Octocopter

FireFLY6 PRO

Location: Granite Canyon, Monterey County, California
Mission: Southwest Fisheries Science Center Granite Canyon Whales

Southwest Fisheries Science Center is conducting operations to evaluate use of the Firefly6 Pro to complete whale surveys.

Location: Kanehoe Bay, Hawaii
Mission: Pacific Island Regional Office Coral Reef Mapping
Coral reef mapping operations are being conducted in Kanehoe Bay. A FAA waiver, 2018-P107-WSA-29955, was granted to allow operations.

Location: Oahu, Hawaii
Mission: Pacific Islands Fisheries Science Center Proficiency/Training Flights
Kawainui Model Airplane Field will be used monthly to perform proficiency flights for Pacific Islands Fisheries Science Center operators. The main objective will be to practice hand launches, recoveries and locating targets. These flights are essential in providing the necessary skills needed for successful operations.

Location: Jamul, California
Mission: Southwest Fisheries Science Center Proficiency Flights
Southwest Fisheries Science Center is utilizing the BLM Jamul California site to conduct proficiency flights.

FireFly 6 PRO

3DR Solo

3DR Solo

Location: Blacksburg, Virginia
Mission: Weather Forecast Office Blacksburg Disaster Assessment
Weather Forecast Office Blacksburg will conduct operations after severe weather events to assess damage stricken areas.

Location: Charleston, South Carolina
Mission: Weather Forecast Office Blacksburg Disaster Assessment
Weather Forecast Office Blacksburg will conduct operations after severe weather events to assess damage stricken areas.

Location: Alafia River State Park (Hillsborough County), Florida
Mission: AOC airworthiness
3DR Solo airworthiness flights at Alafia River State Park.

Meteodrone SSE / Blackswift S2

Location: Oak Ridge, Tennessee
Mission: Instrument Testing and Calibration
A combination of these UAS will be used to conduct flights to in an experiment at Oliver Springs Airport up to 3500' in altitude. Operation will occur under an approved Certificate of Authorization (COA).

Blackswift S2

Meteomatics Meteodrone SSE

MD4-1000

Meteodrone SSE / Blackswift S2

Location: Oak Ridge, Tennessee
Mission: Instrument Testing and Calibration
A combination of these will be used to conduct vertical profile flights to at Oliver Springs Airport up to 3,500' in altitude. Operation will occur under an approved COA.

MD4-1000 / Meteodrone SSE / Blackswift S2

Location: Oak Ridge, Tennessee
Mission: Instrument Testing and Calibration
A combination of these will be used to conduct vertical profile flights to at Oliver Springs Airport up to 1,200' in altitude. The NOAA Class G Blanket COA is utilized for these operations.

DJI S-1000

Matrice 210

Matrice 210 / DJI Phantom 4

Location: Santa Barbara, California
Mission: Payload testing and training
Payload and software testing flights are being conducted at University of California Santa Barbara.

DJI Phantom 4

Image taken from Phantom 4

DJI M600

DJI Phantom 4

Location: Pivers Island, North Carolina
Mission: National Centers for Coastal Ocean Science Pivers Island
Method development flights will be conducted to determine the most efficient way of mapping intertidal wetlands and shallow nearshore habitats. For the purpose of tracking changes in vegetative cover and creating digital elevation models.

DJI Phantom 4 / DJI Mavic

Location: Norfolk, Virginia
Mission: NOAA Ship *Thomas Jefferson,* Proficiency Training
DJI Phantom 4 and Mavic Zoom proficiency flights are being conducted at Marine Operations Center Atlantic.

DJI M600

Location: Santa Barbara, California
Mission: University of California Santa Barbara M600 Test Flights
National Marine Fisheries Science is planning flights at University of California Santa Barbara to test and validate a hyperspectral scanner payload.

P-3 Deployed UAS

Location: Aircraft Operations Center, Lakeland, Florida
Mission: P-3 Deployed UASAOC, Hurricane Research Division and the Unmanned Aircraft Systems Program Office are currently exploring new vehicle options for a hurricane deployed UAS.

OMAO Partnerships

OMAO and the NOAA Commissioned Officer Corps provide key services and leadership to a number of federal agencies and external partners to help them meet their mission – and ours – and to better leverage federal resources.

United States House of Representatives - Natural Resource Committee

Location: Washington, District of Columbia
Detail: Lieutenant Commander Zachary Cress
Lieutenant Commander Cress is currently on detail with the staff to the Committee Chair, Representative Raúl M. Grijalva (D-AZ), where he is assisting on activities pertaining to the Committee's work on oversight and authorization of NOAA programs, as well as other matters within the Committee's jurisdiction.

National Science Foundation (NSF)

Location: South Pole, Antarctica
Embedded Liaison: Lieutenant (Junior Grade) Marisa Gedney
Members of the NOAA Commissioned Officer Corps carry out NOAA's mission in remote locations across the globe. Lieutenant (Junior Grade) Gedney is assigned to Antarctica where she serves as the Station Chief for NOAA's Atmospheric Research Observatory (ARO) at the Amundsen-Scott South Pole Station. The ARO at the Amundsen-Scott South Pole Station is a National Science Foundation facility used in support of scientific research related to atmospheric phenomena.

In December, NOAA's acting Administrator, Dr. Neil Jacobs (right), visited the South Pole as a guest of the NSF, where he met with the two NOAA employees stationed there, Jennie Mowatt (left) and Lieutenant (Junior Grade) Marisa Gedney.
[Photo Credit: Lieutenant (Junior Grade) Marisa Gedney, NOAA]

Department of Defense – U.S. Pacific Command

Location: Honolulu, Hawaii

Embedded Liaison: Captain Joe Bishop

The U.S. Pacific Command (USPACOM) area of responsibility encompasses approximately half the earth's surface and more than half of its population. The 36 nations that comprise the Asia-Pacific include: two of the three largest economies and nine of the ten smallest; the most populous nation; the largest democracy; the largest Muslim-majority nation; and the smallest republic in the world. The region is a vital driver of the global economy and includes the world's busiest international sea lanes and nine of the ten largest ports. By any meaningful measure, the Asia-Pacific is also the most militarized region in the world, with seven of the world's ten largest standing militaries and five of the world's declared nuclear nations. Under these circumstances, the strategic complexity facing the region is unique. Captain Bishop is linked closely with the activities within the region allowing for identification of opportunities and cooperation between USPACOM and NOAA, and better overall government function situational awareness in the region.

Department of Defense – U.S. Northern Command

Location: Boulder, Colorado

Embedded Liaison: Captain Catherine Martin

The U.S. Northern Command (USNORTHCOM) area of responsibility includes air, land and sea approaches and encompasses the continental United States, Alaska, Canada, Mexico and the surrounding water out to approximately 500 nautical miles. It also includes the Gulf of Mexico, the Straits of Florida, and portions of the Caribbean region to include The Bahamas, Puerto Rico, and the U.S. Virgin Islands. The commander of USNORTHCOM is responsible for theater security cooperation with Canada, Mexico, and The Bahamas. The embedded NOAA liaison is linked closely with the activities within the region allowing for identification of opportunities and cooperation between USNORTHCOM and NOAA, and serves as a liaison between fostering greater situational awareness of NOAA response activities to natural disasters and Arctic activities.

Department of Defense – U.S. Navy

Location: Stennis Space Center, Mississippi

Embedded Liaison: Lieutenant (junior grade) Garrison Grant

Embedded in the Navy's Naval Oceanography Mine Warfare Center, Lieutenant (junior grade) Garrison Grant works side by side with Navy officers operating Unmanned Underwater Vehicles worldwide and is currently stationed at Stennis Space Center. This collaboration will provide knowledge and experience that will keep NOAA on the cutting edge of this emerging technology as well as strengthen the partnership between NOAA and the Navy.

Department of Homeland Security – U.S. Coast Guard

Location: Washington, District of Columbia

Embedded Liaison: Captain Kurt Zegowitz

As the NOAA liaison to the United States Coast Guard (USCG), Captain Zegowitz maintains a current and comprehensive knowledge of interagency activities and policies related to the USCG and NOAA. He identifies potential conflicts or benefits issues for analysis and evaluation, conducts appropriate assessments and studies, and serves as the interface between NOAA and the USCG. Captain Zegowitz initiates, designs, and implements strategies through federal agency liaison and coordination that results in cooperative arrangements for maritime security, oceanographic research, hazardous materials spill response, and many other activities.

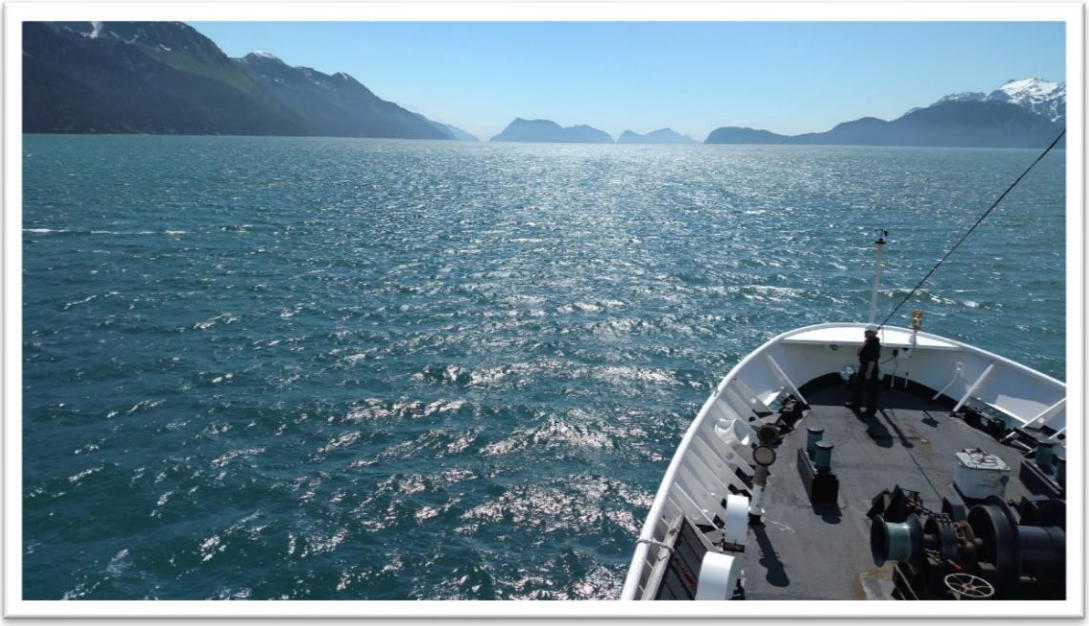
Teacher at Sea Program

The mission of NOAA's Teacher at Sea Program (TAS) is to provide teachers hands-on, real-world research experience working at sea with world-renowned NOAA scientists, thereby giving them unique insight into oceanic and atmospheric research crucial to the nation. The program provides a unique opportunity for kindergarten through college-level teachers to sail aboard NOAA research ships and work under the tutelage of scientists and crew.

Since its inception in 1990, the program has enabled more than 800 teachers to gain first-hand experience of science and life at sea. By participating in this program, teachers enrich their classroom curricula with knowledge that can only be gained by living and working side-by-side, day and night, with those who contribute to the world's body of oceanic and atmospheric scientific knowledge. Former teacher at sea blogs can be accessed, which document their missions at sea and offer a wealth of information about the research being conducted as well as personal stories.

The 2019 TAS Field Season ended in October. During the 2019 season, 19 teachers from 13 states spent over 3,300 research hours aboard NOAA's research vessels. Additionally, they participated in 25 outreach events and 17 media appearances. Highlight videos featuring a few of the Teachers at Sea are available at the program's website.

Applications for the 2020 Field Season were accepted ahead of a deadline on November 30, 2019. Applicants will be notified of their acceptance or denial by early February, 2020.



NOAA Teacher at Sea, Lona Hall captured this view above the bow of NOAA Ship *Rainier* at Kodiak Island, Alaska in 2019. She wrote, "Attempts have been made by poets, explorers, scientists, naturalists, and others throughout history to capture the feeling of being at sea. Although I've read many of their descriptions and tried to imagine myself in their shoes, nothing compares to experiencing it first-hand."
[Photo Credit: Lona Hall, NOAA Teacher at Sea]

OMAO - NOAA Diving Program

Seattle, Washington

NOAA Diving Center and Program

OMAO manages and implements NOAA's Diving Program (NDP), which trains and certifies scientists, engineers, and technicians from federal, state, tribal governments, and the private sector to perform the variety of tasks carried out underwater to support NOAA's mission. NDP also has cooperative diving agreements with over 100 government agencies and academic institutions. NOAA has approximately 350 divers who perform over 8,000 dives per year and leverages its cooperative agreements to accomplish twice that number of dives contributing to scientific research. The NDP is headquartered at the NOAA Diving Center (NDC), which is located at the NOAA Western Regional Center in Seattle, Washington.

The NOAA Diving Center and NOAA Diving Program commenced their January training classes in Key West, Florida on January 6. Execution of the class depends upon the use of a multitude of resources from NOAA, Federal, and local partners. The three-week courses are being attended by 18 Working Diver candidates and 10 Divemaster candidates. With all of the logistics coordinated by late December, the NOAA Diving Center hosted the annual Holiday Potluck for all of Building 8 at the NOAA Western Regional Center in Seattle, WA.

In addition to making training preparations, there is plenty of administrative work that comes with the new year. Diving reciprocity is renewed on January 1 with all of the Federal, State, and Academic Institutions with which NOAA Divers work. Furthermore, Diving Emergency Assistance Plans undergo their required annual review to ensure emergency contact information is up to date. Individual Dive Units are also conducting their annual internal inspections that cover everything from diving equipment and administration to accident drills and checkout skills. The winter may be slow for fieldwork, but maintaining a safe and well-trained unit of divers is a year-round endeavor.

Aside from the NOAA Diver and Divemaster training taking place this month, NDC is also starting to plan the UDS (Unit Dive Supervisor) Workshop that will take place in March, 2020.

NOAA Small Boat Program

Oversight of the NOAA Small Boat Fleet is a collaboration across OMAO, NMFS, NOS, OAR and NWS. The Small Boat Program (SBP) was established in 2004 to create policies and procedures to ensure safety in support of NOAA's field operations. Direction, technical and administrative support is provided by OMAO through the NOAA Small Boat Program Office. NOAA Line and Program Offices are responsible for acquisitions, operational funding and mission support. The NOAA Small Boat Safety Board is comprised of NOAA Line Offices, SBP, and Safety and Environmental Compliance Office (SECO) representatives and is charged with initiating policies and training, program metrics, and compliance.

In addition to its ships and aircraft, NOAA relies on hundreds of small boats located throughout the country to complete the organization's complex and varied scientific missions. The NOAA Small Boat Program is committed to supporting the safe operation of these small boats through the principles of risk management.

The NOAA Small Boat Program manages a fleet of about 400 small boats that perform various data collection missions for NOAA throughout the United States and its territories including hydrographic surveys, fishing, diving, scientific instrument deployment/recovery, water and air quality monitoring, law enforcement and marine mammal surveys. Vessels vary in size from a simple 10-ft. kayak to a complex 85-foot research vessel. The majority of small boats fall within the range of 16-26 feet in length and operate in near-shore environments, but extended missions in deep water environments are common among the larger vessels.

Biological Technicians from NOAA's Milford Lab (Connecticut) deploy gear from the lab's small boat, R/V *Victor Loosanoff*, in Long Island Sound in December 2019.
[Photo Credit: NOAA]

Office of Marine and Aviation Operations

Providing Environmental Intelligence for a Dynamic World

The personnel, ships, and aircraft of NOAA play a critical role in gathering environmental data vital to the nation's economic security, the safety of its citizens, and the understanding, protection, and management of our natural resources. The NOAA fleet of ships and aircraft is managed and operated by the Office of Marine and Aviation Operations (OMAO), an office comprising civilians, mariners, and officers of the NOAA Commissioned Officer Corps, one of the seven uniformed services of the United States. NOAA's roots trace back to 1807 when President Thomas Jefferson ordered the first comprehensive coastal survey. Those early surveys ensured safe passage of ship-borne cargo for a young nation. As the needs of the nation have grown, so too have OMAO's responsibilities. Today, OMAO civilians and NOAA Corps officers operate, manage, and maintain NOAA's active fleet of 15 research and survey ships and nine specialized aircraft. Together, OMAO and the NOAA Corps support nearly all of NOAA's missions.

NOAA Ship *Reuben Lasker.*
[Photo Credit: NOAA]

NOAA has the largest fleet of federal research and survey ships in the nation. The fleet ranges from large oceanographic ships capable of exploring and charting the world's deepest ocean, to smaller vessels responsible for surveying the shallow bays and inlets of the United States. The fleet supports a wide range of marine activities including fisheries surveys, nautical charting, and ocean and climate studies. Based throughout the continental United States, Alaska, and Hawaii, the ships operate in all regions of the nation and around the world.

NOAA's aircraft provide a wide range of airborne capabilities. Our highly specialized Lockheed WP-3D aircraft are equipped with an unprecedented variety of scientific instrumentation, radars, and recording systems for both in situ and remote sensing measurements of the atmosphere, the Earth, and its environment. Equipped with both C-band weather radar and X-band tail Doppler radar systems, the WP-3Ds have the unique ability to conduct tropical cyclone research in addition to storm reconnaissance. Together with NOAA's Gulfstream IV-SP jet, these ‘hurricane hunter’ aircraft greatly improve our physical understanding of hurricanes and enhance the accuracy of tropical cyclone forecasts. NOAA's light aircraft also play a vital role in monitoring our environment. Our King Air, Turbo Prop Commander, and Twin Otter aircraft support marine mammal population studies, shoreline change assessments, oil spill investigations, and water resource/snowpack surveys for spring flood forecasts.

NOAA WP-3D Orion.
[Photo Credit: NOAA]

The NOAA fleet provides immediate response capabilities for unpredictable events. For example, during the 2019 Hurricane season, NOAA flight crews and scientists flew a combined 468 hours for hurricane surveillance, research, reconnaissance, and emergency response. NOAA's Lockheed WP-3D and Gulfstream IV-SP collected and provided vital data used by NOAA scientists for improving modeling, forecasting, and ensuring accurate forecasts were provided to the public. NOAA's Beechcraft King Air 350 rapidly responded to demand from emergency managers, using state-of-the-art equipment to collect thousands of aerial images from Miami, Florida to Norfolk, Virginia, and the northern Bahamas, of damaged and affected communities following Hurricane Dorian. This imagery provided a timely and cost-effective way to better understand the damage sustained to both property and the environment.

While manned aircraft and sea-going vessels have been, and will continue to be, a primary source of environmental data, new technology will have a significant role to play in the future NOAA fleet. OMAO, in coordination with other NOAA offices and federal agencies, is evaluating and deploying unmanned aerial and marine systems that could significantly contribute to environmental observations. To better serve the needs of the Nation, NOAA is examining the composition of the fleet through an exhaustive and critical review of at-sea science and observation requirements. Our objective is to develop a clear, cost-efficient path forward to ensure that the NOAA fleet can continue to conduct at-sea surveys and research vital to fisheries management, updating nautical charts, responding to natural and man-made disasters, and understanding coastal and marine systems more fully. Meeting these requirements is essential to the development of sustainable, science-based management and conservation plans that protect the health and resiliency of these resources over the long-term.

We continue our efforts to build a civilian and NOAA Corps officer workforce that is uniquely qualified to gather critical environmental intelligence and be adaptive and responsive to a changing world and work to expand our partnerships with other federal agencies. For example, NOAA Corps officers are currently assigned to work in the Department of Defense, National Science Foundation, and the U.S. House Representatives among others where they lend their leadership, expertise and service. We also continue to strengthen our partnership with the Department of Homeland Security through the U.S. Coast Guard. Our basic NOAA Corps officer training class is held at the U.S. Coast Guard Academy, where newly commissioned officers train alongside Coast Guard officer candidates, developing skills and professional relationships that will benefit both services, especially during challenging times. Active collaboration the Federal family is critical to ensuring the long-term capability and success of the federal ocean infrastructure. Our partners' success is our success.

NOAA Commissioned Officer Corps

– Honor, Respect, Commitment –

The NOAA Commissioned Officer Corps is one of the United States' seven Uniformed Services and commissioned officers serve with the 'special trust and confidence' of the President. NOAA Corps officers are an integral part of the National Oceanic and Atmospheric Administration, an agency of the U.S. Department of Commerce. With an authorized strength of 321 officers, the NOAA Corps serves throughout the agency's Line and Staff Offices to support nearly all of NOAA's programs and missions. The combination of commissioned service and scientific expertise makes these officers uniquely capable of leading some of NOAA's most important initiatives. The NOAA Corps is part of NOAA's Office of Marine and Aviation Operations and traces its roots back to the former U.S. Coast and Geodetic Survey, which dates back to 1807 and President Thomas Jefferson. The U.S. Coast and Geodetic Survey Corps was founded in 1917 to provide officers to command U.S. coastal survey ships and field survey parties locally and abroad. In 1970, NOAA was created to develop a coordinated approach to oceanographic and atmospheric research and subsequent legislation converted the commissioned officer corps to the NOAA Corps. The NOAA Corps today provides a cadre of professionals trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. Corps officers operate NOAA's ships, fly aircraft, manage research projects, conduct diving operations, and serve in staff positions throughout NOAA. The NOAA Corps celebrated its Centennial year in 2017.

Benefits of the NOAA Corps to the Nation

The combination of commissioned service with scientific and operational expertise, allows the NOAA Corps to provide a unique and indispensable service to the nation. Discipline and flexibility are inherent in the NOAA Corps personnel system. Officers are trained for positions of leadership and command in the operation of ships and aircraft; in the conduct of field projects on land, at and under the sea, and in the air; in the management of NOAA observational and support facilities; as members or leaders of research efforts; and in the management of various organizational elements throughout NOAA. NOAA Corps officers must be technically competent to assume positions of leadership and command in NOAA and Department of Commerce programs and in the Armed Forces during times of war or national emergency. NOAA Corps officers enable NOAA to fulfill mission requirements, meet changing environmental concerns, take advantage of emerging technologies, and serve as environmental first responders. For example:

- In 2019, NOAA aircraft flew over 468 hours in support of storm reconnaissance, surveillance, research and emergency response. NOAA assets performed multiple operations in the Gulf of Mexico, North Atlantic and the Caribbean for Hurricanes Barry, Dorian, Humberto, Jerry, Lorenzo and Tropical Storm Nestor. During the reconnaissance of Hurricane Lorenzo, NOAA's two Orion P-3s provided on-scene coordination during the Search and Rescue operation for the M/V *Bourbon Rhode*. In response to Hurricane Dorian, NOAA's King Air 350 flew post-storm, damage assessment imagery over areas of the northern Bahamas, and of the U.S. east coast from the north end of the Florida Keys to Virginia Beach, Virginia. Nearly 27,000 images were collected, covering over 11,000 square kilometers, including shorelines, ports, and impacted inland areas of several islands to aid in emergency response.
- In 2018, NOAA aircraft flew over 556 hours in support of storm reconnaissance, surveillance, research and emergency response for Hurricanes Hector, Lane, and Norman in the Central Pacific, and Hurricanes Chris, Florence, Gordon, Isaac, and Michael in the Gulf of Mexico, North Atlantic, and Caribbean Sea. In response to Hurricane Florence, NOAA Ship *Ferdinand R. Hassler* surveyed eastern North Carolina for multiple days in order to ensure vessels could safely navigate the area. NOAA Ship *Thomas Jefferson* conducted 66 days of post-Hurricane Maria surveys in and around Puerto Rico to support the island's recovery efforts.

- The BP Deepwater Horizon oil spill was the worst oil disaster in U.S. history. The NOAA fleet and the NOAA Corps played a major role in the response to the Deepwater Horizon oil spill. NOAA's entire Atlantic fleet and over a quarter of the total strength of the NOAA Corps were deployed to the Gulf of Mexico following this devastating event.

OMAO/NOAA Corps Resources

OMAO Sites

- OMAO
- NOAA Corps

Two Pagers, Reports, and Informational Slide Decks

- **Monthly NOAA Fleet Update** - The latest version is provided to Committee staff and is also available through the Office of Legislative and Intergovernmental Affairs.
- Hurricane Michael Flight and Mission Info Recap - 2018
- Tornado Formation, Intensity, and Path for the Southeast United States: Research Flight and Mission Info Recap – 2018
- Hurricane Lane Flight and Mission Info Recap - 2018
- OMAO two pager with Recent Mission Highlights – 2018
- OMAO Fleet Recapitalization Slide Deck – Building NOAA's 21st Century Fleet
- OMAO Fleet Recapitalization Questions and Answers (Q&As)
- NOAA Fleet Independent Review Team Final Report
- The NOAA Fleet Plan: Building NOAA's 21st Century Fleet

Other Web Resources

- OMAO Marine Operations
- OMAO Aircraft Operations
- OMAO on Facebook
- Hurricane Hunters on Facebook
- OMAO on Twitter
- Hurricane Hunters on Twitter
- OMAO Ship Tracker - (restricted to only .gov or .mil users)